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EXAMINER	
JEFFERY, JOHN A	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/996,842
Filing Date: November 29, 2001
Appellant(s): PELONIS, KOSTA L.

Alex R. Sluzas
For Appellant

EXAMINER'S ANSWER

This is in response to the supplemental appeal brief filed July 16, 2004.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The brief does not contain a statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief. Therefore, it is presumed that there are none. The Board, however, may exercise its discretion to require an explicit statement as to the existence of any related appeals and interferences.

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-7 that stand non-finally rejected.

(4) Status of Amendments After Final

Because the claims on appeal are not finally rejected, there are no amendments after final rejection.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 1-7 stand or fall together because, as noted by appellant, the claims comprise a single group.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

4,870,253	DE'LONGHI	9-1989
2,075,323	WOOLLEY	3-1937

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over De'Longhi (US4870253) in view of Woolley (US2075323). De'Longhi (US4870253) discloses a portable, sealed electrically-heated radiator containing a diathermal fluid

within tubular radiator units. The diathermal fluid is heated by an electric heater 4 positioned within the sealed radiator. See Figs. 1 and 2. A centrifugal fan 6 (col. 4, line 22) mounted adjacent the tubular units enhances thermal convection.

The claims differ from De'Longhi in calling for the fan to be positioned above the sealed radiator to enhance thermal convection of the diathermal fluid within the tubular radiator units. Woolley (US2075323) discloses a covered, sealed radiator heater comprising a plurality of tubular radiator units and fans 18 positioned above the radiator units for directing air onto the radiator units' upper portions enhancing thermal convection. See Fig. 1 and P. 1, col. 2, lines 27-42. According to P. 1, lines 24-35 of Woolley, "air is projected downwardly over the heat transferring surfaces of the radiator and is discharged at a predetermined point near the floor of the room...thereby positively heating a maximum volume of the room air, and also most effectively distributing heat uniformly throughout the room." In view of Woolley, it would have been obvious to one of ordinary skill in the art to provide the fan above the tubular radiator units in De'Longhi to air is project air downwardly over the heat transferring surfaces of the radiator and discharge air at a predetermined point near the floor of the room thus positively heating a maximum volume of room air, and more uniformly distributing heat throughout the room.

Regarding the limitation calling for enhancing thermal convection of the diathermal fluid, mounting a fan above the tubular radiation units in De'Longhi -- such that the fan blows air directly on, and downwardly over, the tubular units -- would inherently influence the temperature of the diathermal fluid contained therein.

Therefore, such a fan mounting with respect to the tubular units in De'Longhi would inherently enhance thermal convection of the fluid.

The claims also differ from the previously cited prior art in calling for the electric motor driving the fan at low rpm. However, as is well known in the art, the speed of the fan in heat radiators is directly proportional to the convective heating effect. That is, driving a fan at higher speed will result in a greater convective heating effect as compared to lower speeds. For example, Woolley (US2075323) on Page 2, lines 19-28 discloses driving a fan in conjunction with a radiator for heating a room at reduced speed (note "half or other partial speed in lines 26-27) depending on the desired temperature setting. In view of Woolley (US2075323), it would have been obvious to one of ordinary skill in the art to provide a reduced fan speed setting in the previously described apparatus so that a reduced convective heating effect was achieved thereby avoiding overheating of the space to be heated.

Regarding claims 5 and 6, no criticality is seen in the specific motor rpm values. Furthermore, it is well settled that where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233,235 (CCPA 1955). Moreover, courts have held that even if "applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art, unless the claimed ranges 'produce a new and unexpected result from which is different in kind and not merely in degree from the results of the prior art.'" *In re Huang*, 100 F.3d 135, 139 (Fed. Cir. 1996); 40

U.S.P.Q. 2d 1685 (*citations omitted*). Here, one of ordinary skill in the art would know that reducing the motor speed would correspondingly reduce the airflow rate of the fan (*see e.g.,* P. 2, col. 2, lines 19-29 of Woolley) and the specific rpm values claimed are within the scope of routine experimentation by one of ordinary skill in the art.

(11) Response to Argument

The examiner has fully considered appellant's arguments asserted in the Supplemental Appeal Brief ("Brief"). For the reasons set forth below, however, appellant has not overcome the examiner's *prima facie* case of obviousness under 35 U.S.C. § 103(a) of claims 1-7. Accordingly, the Board must affirm the examiner's rejection of those claims.

1. Mounting a Fan Above De'Longhi's Radiator Units Would Have Been Obvious to the Skilled Artisan in view of Woolley.

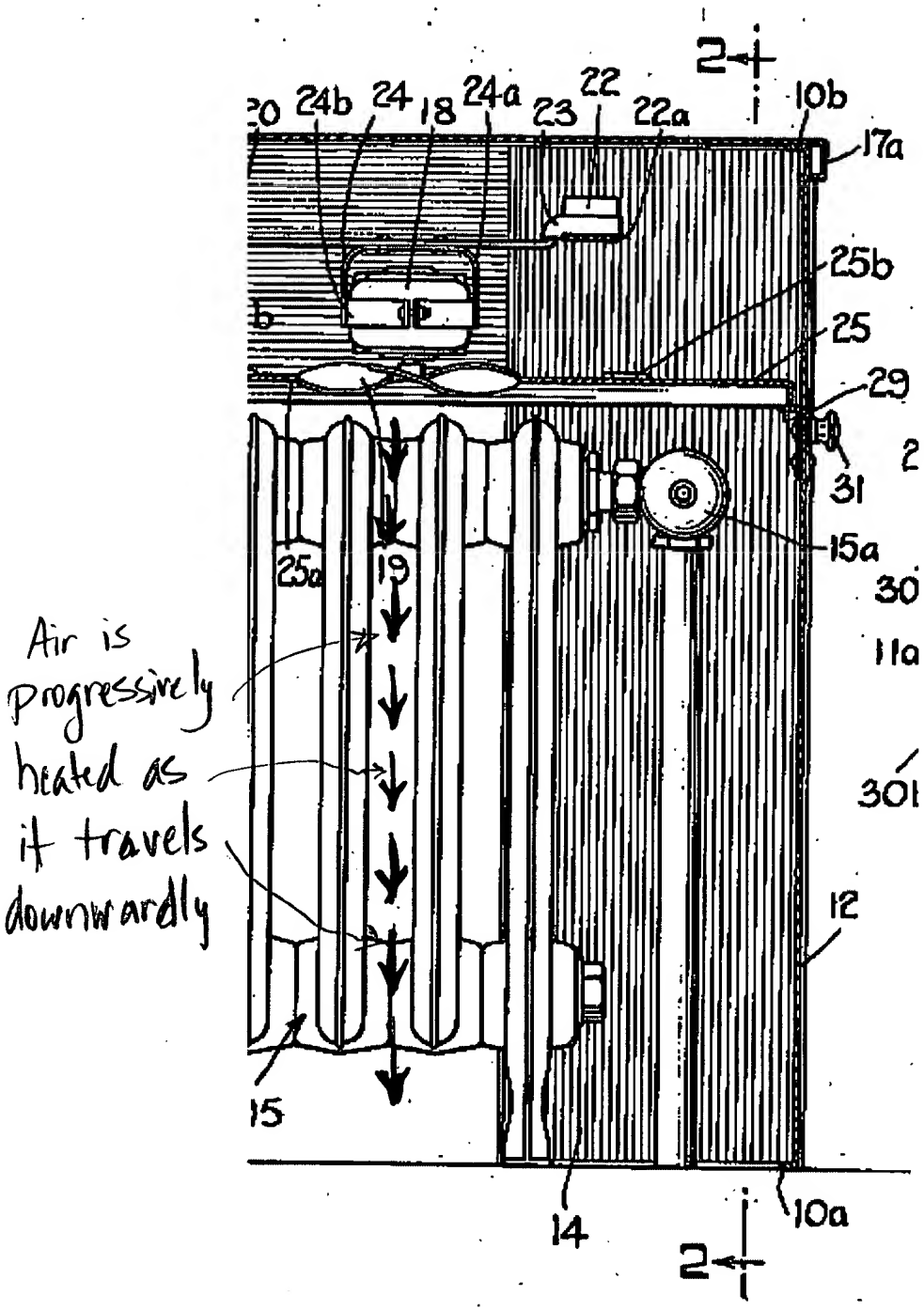
The fundamental issue in this case is the obviousness of the location of the fan in a sealed convection heater with radiator units; specifically, whether it would be obvious to mount a fan above the radiator units in lieu of below the radiator units in a portable heater.

As noted in the rejection, De'Longhi discloses a portable, electrically-heated convection heater with all of the structure claimed except for mounting the fan above the sealed radiator. Admittedly, De'Longhi disposes the centrifugal fan unit 6 below the radiator as best seen in Fig. 2. The examiner, however, firmly believes that mounting the fan above the radiator would nevertheless have been obvious to the skilled artisan

at the time the invention was made in view of Woolley. Woolley expressly teaches providing such a downward airflow to effectively distribute heat uniformly throughout a room to be heated. In fact, De'Longhi seeks a similar goal -- to more uniformly distribute heat throughout the room. *See, e.g.,* De'Longhi, col. 1, lines 41-49. Thus, in view of the similar objectives of both De'Longhi and Woolley, the skilled artisan would reasonably rely on Woolley's teaching in the De'Longhi heater to achieve a more uniform heat distribution.

By mounting the fans above the radiator as shown by Wooley, air is projected downwardly over the heat transferring surfaces of the radiator and discharged at a point near the floor. Woolley, P. 1, col. 1, lines 24-35. Not only does such an airflow pattern heat a maximum volume of the room's air, but it also promotes a more uniform heat distribution throughout the room. *Id.*

Moreover, unlike the De'Longhi arrangement, by directing air downwardly over the radiator units, air travels along the entire longitudinal axis of the radiator units prior to exit, thus improving heat transfer efficiency. That is, as the air travels from the top to the bottom of the radiator tubes, the air progressively becomes hotter as increasingly more heat is transferred from the radiator to the air prior to its exit. Fig. 1 of Woolley is reproduced below to clarify this effect.



As shown in the annotated figure above, as air travels downwardly, it will become increasingly hotter prior to exiting the structure. This arrangement forces the air to

remain in close proximity to the radiating tubes during travel. Thus, the downward airflow direction along the radiator's entire longitudinal axis promotes greater heat transfer efficiency by ensuring the air either directly contacts, or is directly adjacent to, the radiator tubes during travel.

2. Mounting a Fan Above the Radiator Units As Suggested by Woolley Would Not Destroy Nor Substantially Impair the Utility of De'Longhi's Heater.

Mounting a fan above the radiator units in De'Longhi would not destroy nor substantially impair its utility. On the contrary, De'Longhi's objective -- to uniformly heat the room in which the heater is placed -- would readily be achieved by adopting the teachings of Woolley.

Appellant argues that combining Woolley with De'Longhi as noted by the examiner is improper because it would destroy or substantially impair De'Longhi's invention. Brief, at 5. First, appellant argues that by moving the fan unit 6 to the top of the apparatus would prevent its rotation to direct heated air substantially parallel and adjacent the floor. Brief, at 6. But if the same type of fan and mounting as that shown in De'Longhi were simply relocated to the top of De'Longhi's apparatus as strongly suggested by Woolley, the pivotal movement of the fan with respect to the heater housing and tubular units would remain intact. In short, the ability to direct the air either adjacent the radiator tubes or in a direction parallel to the plane of the floor would not be destroyed nor substantially impaired by the De'Longhi/Wooley combination. In fact, by having the ability to direct the air downwardly along the radiator tubes in the manner

taught by Woolley, there is actually an increased ability to achieve uniform room heating due to the enhanced heat transfer process explained above.

Furthermore, although such a downward airflow would eventually strike the floor and be redirected away from the heater as appellant notes, such an airflow pattern nevertheless would not diminish the ability of the heater to uniformly heat the room -- even if the intensity of the airflow were reduced. In fact, although Woolley's downward airflow pattern similarly contacts -- and is redirected by -- the floor, the heated airflow ultimately uniformly heats the room. *See* Woolley, at P. 1, col. 1, lines 28-35 (noting that by projecting air downwardly over the radiator surfaces and discharging the heated air near the floor, the apparatus "most effectively distribut[es] heat uniformly throughout the room"). And even if, for the sake of argument, there is an airflow intensity reduction by the air's contact with the floor, Wooley nevertheless achieves uniform room heating with a downwardly directed -- and redirected -- airflow.

Moreover, if the fan were pivoted to produce an airflow parallel to the floor in the modified heater, the modest increase in elevation of the airflow with the fan mounted above the tubes as compared to below the tubes in De'Longhi would likely have a negligible effect on its convective heating ability given the relatively small size of portable heaters.

The examiner recognizes that if his proposed modification to De'Longhi renders De'Longhi's apparatus unsatisfactory for its intended purpose, then no suggestion or motivation to make the modification exists. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). But as noted above, the examiner's modification would not

render De'Longhi's apparatus unsatisfactory for its intended purpose. On the contrary, in light of Woolley's identical goal of uniformly heating the room, mounting the fan above the tubes would likely render De'Longhi's heater at least as suitable -- and perhaps even more suitable -- for its intended purpose: to more uniformly heat the room.

In short, the skilled artisan would reasonably apply the teachings of Wooley to De'Longhi to achieve uniform convective heating throughout the room. Mounting the fan above the radiator tubes in De'Longhi would not render it unsuitable for its intended purpose, nor would it destroy its utility. The combination of Woolley with De'Longhi is therefore proper. Accordingly, the Board must affirm the examiner's obviousness rejection.

Appellant also argues on Page 5 of the Brief that, if the fan unit were relocated above the radiator unit, the resistors 8 of De'Longhi's thermoventilation unit must be turned off, rather than maintaining the resistors 8 on to assist in heating the diathermal fluid when the radiator is turned on. There is simply no evidence in the record that supports this assertion. Although the fan unit is designed to ultimately cool the upper portions of the radiator tubes, such a goal does not preclude the thermoventilation unit preheating the tubes with the resistors 8 from above the tubes to assist in bringing the diathermal fluid up to operating temperature. In short, De'Longhi's utility would not be destroyed nor substantially impaired by relocating the fan unit above the radiator.

Moreover, appellant's argument is not consistent with the purpose of the resistors 8 in De'Longhi. Electric heat from resistors 8 is merely optional. As noted in col. 2, line

66 - col. 3, line 20, the resistors 8 perform an auxiliary heating function in concert with the electric heating element 4 within the radiator fluid.

3. The Prior Art Fan Mounting Arrangement Inherently Enhances Convection of the Diathermal Fluid Within the Radiator Tubes.

Appellant agrees in the paragraph bridging Pages 6 and 7 of the Brief that mounting a fan above the tubular units as shown by Woolley would inherently influence the diathermal fluid's temperature therein. Appellant, however, argues that the effect on thermal convection depends on the facts, and the modification proposed by the examiner may not produce the desired effect.

The examiner, however, does not see how the fan mounting arrangement in the De'Longhi/Wooley arrangement would be substantially different from that of the instant invention to produce a substantially different convective effect on the fluid within the tubes. As in the invention, by mounting the fan above the tubes as proposed in the De'Longhi/Wooley combination, such an airflow would impinge directly on the upper portions of the tubes and inherently cool the upper portion of the tubes, thus inherently enhancing convection of the diathermal fluid contained therein. The limitation is fully met.

4. The Specific Motor Speed Values Claimed in Claims 5 and 6 are Not Critical to the Invention and Mere Optimum Values Readily Discoverable By Skilled Artisans Via Routine Experimentation.

The optimum fan speed is a function of the desired convective heating effect and is readily discoverable by skilled artisans by routine experimentation. As noted in the

rejection, although Wooley does not expressly state the claimed motor rpm values, the reference nonetheless teaches changing a fan's speed to alter the convective heating effect from the apparatus. See Woolley, P. 2, col. 2, lines 19-29. Such a relationship is well known in the art, and the specific selection of fan speed will depend upon the desired heating effect.

Moreover, contrary to appellant's assertion on Page 10 of the originally-filed Appeal Brief of Feb. 9, 2004 ("the originally-filed Brief"), a fan with different speeds would not necessarily reduce thermal convection of the diathermal fluid within the tubes. The fan of the prior art would not necessarily have to be operated at a speed that would excessively increase heat transfer from the tubes' surfaces and "possibly" decrease thermal convection of the diathermal fluid as appellant speculates. In short, the optimum fan speed is a function of the desired convective heating effect, and is readily discoverable by skilled artisans by routine experimentation given a number of engineering factors -- the ambient room temperature, the desired room temperature, the size of the room to be heated, the heat output of the heaters, the number of radiators, etc.

Appellant also argues on Page 10, first paragraph of the originally-filed Brief that the prior art does not motivate the skilled artisan to select a fan speed to reduce noise. However, as is well known in the art, a fan is typically quieter at slower speeds as compared to higher speeds. Thus, reducing fan speed would accordingly reduce fan noise. And, as noted previously, the optimum fan speed -- and associated noise level

associated with such a speed -- is readily discoverable by skilled artisans via routine experimentation and optimization given the engineering factors noted above.

5. Conclusion

For the reasons stated above, appellant has not overcome the examiner's *prima facie* case of obviousness under 35 U.S.C. § 103(a) of claims 1-7. Accordingly, the Board must affirm the examiner's rejection of those claims.

Respectfully submitted,

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jaj
February 4, 2005

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